

SPECIES ON THE EDGE

Quality Management Is Quality Growth

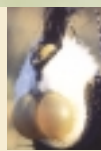
Utah
Department of
Natural
Resources



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2001 Endangered Species Management Report

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On The Cover:
Boreal Toad



MICHAEL O. LEAVITT
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OLENE S. WALKER
LIEUTENANT GOVERNOR

The Endangered Species Mitigation Fund was established during the 1998 general session of the Utah legislature. The fund creates a financial mechanism for land and water developers to work cooperatively with local government to create economic growth and protect the habitat of sensitive and endangered species.

This publication provides a clear explanation of the purposes and proper uses of the fund. I encourage you to read it and learn how this funding tool can help you.

I support and commend those who created the Endangered Species Mitigation Fund. I am confident it will help developers and resource managers alike balance the need for habitat protection and economic development.

Sincerely

A handwritten signature in black ink, appearing to read "Michael O. Leavitt". The signature is stylized with a large initial "M" and a long horizontal stroke.

Michael O. Leavitt
Governor

Kathleen Clarke



The Endangered Species Mitigation Fund (ESMF) was created by the Utah Legislature to assist local governments and citizens to comply with the federal requirements of the Endangered Species Act (ESA) of 1973. Creation of the ESMF brought together a coalition of groups, including private water users, developers, the environmental community and government agencies led by the Utah Department of Natural Resources (DNR).

The ESMF is a substantial, non-lapsing fund which addresses the needs of people and communities who have struggled financially to comply with the requirements of the federal law. It allows for economic growth and development opportunities while providing for habitat and other needs of flora and fauna listed under ESA and conservation species managed under cooperative conservation agreements that reduce the need for listing or any other sensitive species that are believed most vulnerable to needing protection under the ESA.

The DNR will manage the ESMF, consistent with our mission to "sustain and enhance the quality of life for people today and tomorrow through the coordinated and balanced stewardship of our natural resources."

Applications for the Endangered Species Mitigation Fund

Following publication of this report, we anticipate that some questions will arise regarding the availability of the Endangered Species Mitigation Fund (ESMF) to help alleviate Endangered Species Act (ESA) problems or concerns throughout the state. Therefore the basics of criteria, application deadlines and where to get additional help are summarized below.

Criteria

The purpose of the ESMF is to help the citizens of Utah maintain a high quality of life both economically and environmentally by studying and conserving flora and fauna listed under the ESA, conservation species and sensitive species, and by assisting local communities and private property holders to comply with provisions of the ESA. Projects will be selected based on their balance between resource stewardship and need for development, their ability to

enhance Utah's quality of life both environmentally and economically, and be consistent with the legislative intent of Utah Code 63-34-14.

Projects should provide direct benefits to listed and sensitive species and be sound biologically. When possible, projects should be cost shared and will be given priority based on their benefit and cost, permanence and overall compatibility with local needs and interests.

Finally, applicants should demonstrate capability to complete the project, have full public support, and make sure their project is consistent with tribal, state and federal laws.

Initially, many projects will be funded which will help remove threats to species and thereby reduce their likelihood of being formally listed under ESA. Additionally, studies will be undertaken to determine actual presence and absence of species, in order that sound scientific determinations will be

made during the listing process. Funding will also be made available to help communities and individuals comply with biological opinions or protection measures required by the ESA.

Application Deadline

Applications will be accepted for 60 days prior to April 1, 2002. Successful applicants will be notified within 60 days and funding will be made available after July 1, 2002

Questions or Concerns

If you have questions, would like an application form, or would like more specific information regarding the Endangered Species Mitigation Fund, please contact:

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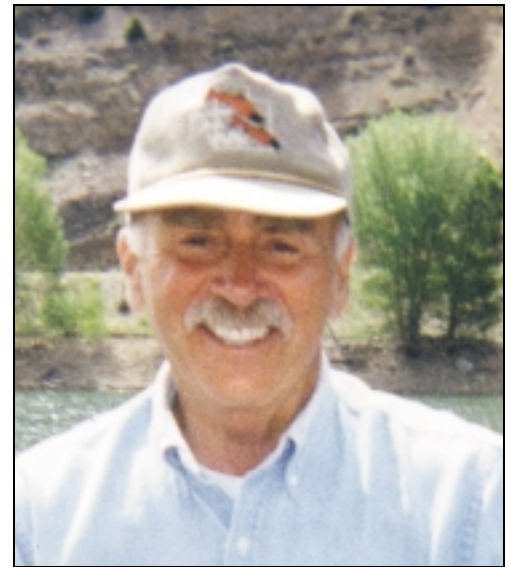
“Species on the Edge”

This publication serves as a report to Utahns on the work which has been funded by the Endangered Species Mitigation Fund (ESMF). In 1998, the Utah Legislature passed the ESMF to help state agencies and other political subdivisions of the state fund activities to help recover and conserve flora and fauna listed under the Endangered Species Act (ESA), conservation species and other sensitive species to work to prevent Utah's plants and animals from declining to the point where federal listing under the ESA is necessary.

As the ESMF program evolves, emphasis will be placed on developing partnerships among public and private entities to provide for water and land development while ensuring the protection of our so called “species on the edge.” These are goals which many people said could not be accomplished. I am happy to say that they were wrong.

In fact, Utah has become a recognized leader in the West in developing and implementing cooperative conservation agreements for “conservation species,” preventing them from becoming listed. The Colorado River cutthroat trout conservation agreement is an outstanding example of such an agreement. The ESMF will result in many more such agreements.

The ESMF funding comes from several sources, but primarily from users' fees



John Kimball

and other revenue collected from the brine shrimp industry on the Great Salt Lake and from the Utah legislature's General Fund.

For the next several years, a significant percentage of ESMF monies will go into the Upper Colorado River Endangered Fish Recovery Program, the June Sucker Recovery Implementation Program, and the Virgin River Resource Management and Recovery Plan.

ESMF funding may also be used in conservation efforts for the Bonneville cutthroat trout, Utah prairie dog, desert tortoise, Sage-grouse and other aquatic and terrestrial recovery programs. This annual report documents the overview of this fund and these programs.

The Division of Wildlife Resources sincerely appreciates the Utah Legislature's participation in this program. The ESMF represents a new lease on life for Utah's wildlife and for our citizens. The fund will help land and water developers throughout the state continue to stimulate local economies in a manner which is sensitive to our stewardship responsibilities of maintaining Utah's wildlife resources.

A handwritten signature of John Kimball in black ink.

VIRGIN RIVER

Fishes Recovery Program

by Reed Harris, Recovery Programs Director,
Utah Department of Natural Resources

Avoiding the Train Wreck In Washington County

“Train Wreck was the term coined several years ago to depict environmental restrictions entangled with and competing with local communities’ need for economic growth.”

On that track, Washington County, which has more listed and sensitive species than any other county in Utah, is one of the counties experiencing the highest growth rate. Fortunately, programs are now in place to provide the balance needed to protect the fragile desert environment and economic growth.

At the juncture or overlapping of three major ecosystems, the Mohave Desert, the Great Basin and the Colorado Plateau, Washington County is an ecological example of “edge effect” or increased richness and uniqueness — not only of vistas and scenery — but in biological diversity.

Water in this area is centered in a few small rivers and their tributaries. These streams are the lifeblood to both Washington County and its residents — and to two listed and one “conservation” fish species.

To avoid the collision, Washington County Water Conservancy District, the State of Utah, and the U.S. Fish and Wildlife Service (USFWS) banded with the U.S. Bureau of Land Management (BLM) and National Park Service (NPS) and a representative from the environmental community (The Grand Canyon Trust) to develop a Virgin River Resource Management and Recovery Program.

Goals of the program are two fold and of equal importance. First, protecting and conserving native fishes in the Virgin River Basin; second, ensuring water use continues in the basin based on Utah’s water rights system.

Growth in Washington County has quadrupled since the 1980s. St. George and area towns are inundated with requests to build new residential areas, golf courses and business complexes. To meet their need for water, communities are relying on conservation, drilling wells and building new storage where available.



Virgin River Chub

Concurrently, the Shivwits Band of the Paiute Indians has settled their water rights needs with the State of Utah and are planning to use 4,000 acre-feet of water in the near future.

Continuing construction of Sand Hollow Reservoir, drilling of new wells, planning for Water Reuse by St. George, and long-term consideration of a Lake Powell pipeline have all been and are being pursued by the water development community.

Protecting the Virgin River fishes, likewise, has been an on going concern of several environmental groups, federal and state governments, and local citizen's concerned about the riparian and aquatic resources adjacent to and within the river corridor.

The Virgin spinedace (*Lepidomeda molispinis*), which is found in the upper Virgin River and its tributaries, is currently protected under a conservation agreement and efforts are expanding along the Santa Clara River and other smaller tributaries to ensure continued habitat availability and management protection for this species.

Specific program accomplishments to date include acquisition of aquatic and floodplain habitats, renovation of stream habitats through the removal of non-native competitors, construction of hatchery facilities for broodstock maintenance, and continuing research into habitat needs and opportunities for enhancement of stream reaches.

The three largest projects presently being funded by the program include, construction of the Santa Clara Pipeline, renovation of the mainstem Virgin River, and protection of river habitat and floodplain through conservation easement and zoning. A brief discussion of the three follows:

Construction of the Santa Clara Pipeline

Flows in the Santa Clara River below Gunlock Reservoir are high in the spring and during the summer irrigation season, but virtually non-existent during the winter period.

In order to put a year-round flow in the Santa Clara River, a pipeline will be constructed to convey water to adjacent towns, Shivwits Band users and irrigators. The water saved by putting the existing leaking canal into a pipe can then be



Virgin spinedace



Woundfin Minnow

used to provide a minimum flow below Gunlock Reservoir.

A flow of approximately 3 cfs will be provided year-round which allows the reintroduction of Virgin spinedace and the redevelopment of native fish assemblages.

Funding for the pipeline is in place, environmental compliance is underway and beneficiaries of the saved water will be assured prompt, regular delivery of their water.

Construction on the pipeline will begin in late 2001. Concurrently, plans are being put in place to test what happens to the water once it is released downstream.

Concern over the interaction of wells being pumped adjacent to the stream course and the maintenance of minimum flows as far downstream as possible are adding to the complexity of this issue.

However, resources are in place to provide assurance for instream habitat improvement — including the purchase of a portion of the conservation pool in Gunlock Reservoir to provide river flow in “dry” years.

Additionally, U.S. Congress appropriated a \$3 million specific fund to help conserve Virgin spinedace associated with the Shivwits water rights settlement.

Renovation of the Virgin River

Since the first observation of red shiner (*Cyprinella lutrensis*) in the Utah portion of the Virgin River in 1984, woundfin (*Plagopterus argentissimus*) populations have declined. Red shiner negatively impact woundfin populations both through competition and through predation. Chemical treatments in the river have eradicated red shiner in short stretches since 1988.

Complete removal, however, has not been possible because of the large expanse of river, which needs to be treated. Therefore, a temporary barrier will be built near Webb Hill and red shiner eradication will commence from the Washington Field Diversion (the uppermost limit of red shiner movement) down to Webb Hill.

Complete eradication of red shiner would provide one of the single most effective things the program could do to recover woundfin in the Virgin River below Washington Fields Diversion. Moreover, such an effort would enhance and protect the remaining viable populations of woundfin above Washington Fields Diversion, which are now susceptible to red shiner contamination simply because of proximity.



Floodplain Protection and River Restoration

The 100-year floodplain of the Virgin River from Pah Tempe downstream for most of its entire length has been designated critical habitat under Endangered Species Act (ESA) for woundfin and Virgin River chub (*Gila seminuda*).

This riparian corridor is also the home of the Southwestern Willow Flycatcher (*Empidonax traillii extimusand*) and desert tortoise (*Gopherus agassizii*) — both listed under ESA — as well as a number of other wildlife species.

Permanent structures in the corridor are rare because of flash flooding which is common to the river system throughout the fall months. Never-the-less, public use of the corridor is increasing and

trail systems are becoming commonplace.

Recognizing these mutually beneficial and compatible uses, the program has attempted to work with local communities, Utah Open Space Council, outdoor groups and others as partners in the protection of these valuable lands. Initial purchases near the confluence of Ash and LaVerkin creeks with Virgin River have provided state, federal, Washington County and local interests the opportunity to protect these riparian corridors, plan for restoration of aquatic and streamside habitats and establish a trail system which will benefit not only listed species but will provide for public use now and into the future.

To accomplish program goals, Washington County Water Conservancy District and the USFWS will equally match funding provided through the state's Endangered Species Mitigation Fund.

The BLM, the NPS and the Grand Canyon Trust will contribute additional time, efforts and funds, when available.

More importantly, however, the funding does more than simply provide environmental improvements, it helps avoid the possibility of future train wrecks by providing the way for Washington County and its citizens to continue to use their water resources beneficially and in compliance with the ESA.

Colorado River

Fishes Recovery Program

by Robert King, Utah Division of Water Resources

Colorado River



Four species of fish that inhabit the Colorado River system have been federally listed as endangered: the Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*). The Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (hereafter "Upper Colorado Recovery Program") was initiated by a Cooperative Agreement signed on January 21, 1988 by the Secretary of the Interior, the Governors of the States of Colorado, Utah and Wyoming and the Administrator of the Western Area Power Administration.

The goal of the Upper Colorado Recovery Program is to recover the four species of endangered fish in compliance with the Federal Endangered Species Act (ESA), while allowing water development to continue in the Upper Basin states of Colorado, Utah and Wyoming.

The 15-year Upper Colorado Recovery Program outlines an aggressive effort to recover the endangered fishes in the Upper Colorado River Basin in a manner

that is consistent with the interstate river basin compacts and state's water rights systems. The signing of the cooperative agreement established an implementation committee comprised of representatives of the Program's participating agencies and entities. The implementation committee's purpose is to oversee the implementation of the Upper Colorado Recovery Program, for which the U.S. Fish and Wildlife Service has lead the responsibility.

Through the recovery program, government agencies, Native American tribes and private organizations are working to achieve recovery of endangered fish while balancing the continuing demands for water in the arid West.

Equal partners

The following organizations and agencies are represented on the Upper Colorado Recovery Program: U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Western Area Power Administration, State of Colorado, State of Utah, State of Wyoming, The Nature Conservancy, Environmental Defense, Colorado Water Congress, Utah Water Users Association, Wyoming Water

Association, and the Colorado River Energy Distributors Association.

The participants are equal partners in the recovery programs. In the Upper Colorado Recovery Program, decisions are made by consensus. The recovery program works within state laws and supports water development under interstate water compacts. It is anticipated that actions taken under these programs also will provide benefits to other native fishes in the Colorado River Basin and prevent them from becoming listed under ESA in the future.

The programs have also allowed the U.S. Fish and Wildlife Service to streamline its required consultation process and have reduced financial burdens on water development projects. Failure to recover the endangered species could result in limitations on current and future water development and use in the Upper Colorado River Basin states.

Recovery strategies include conducting research, improving river habitat, providing adequate stream flows, managing non-native fish, and raising ESA-listed fish in hatcheries for stocking. Endangered Colorado pikeminnow, razorback sucker, bonytail and humpback chub will be considered recovered when approved recovery goals are achieved.

Annual program expenditures have ranged from about \$2 million to \$13 million. Program expenditures have been made for habitat development, habitat management, in-stream flow acquisition, non-native fish management, hatchery construction and operation, endangered fish stocking, research, public information and education and program management. Information about each of the Program elements follows.



Bonytail Chub



Colorado Pike Minnow

Providing adequate stream flows

This aspect of endangered fish recovery involves acquiring adequate stream flows and altering operations of dams and other facilities to re-create more natural flow patterns. This strategy mimics natural stream flows, providing high flows during natural spring runoff, and lower, more stable flows the rest of the year. Large volumes of water carve out the riverside nooks and crannies, or backwaters and side channels, that endangered fish need to feed, grow, survive and provide conditions suitable for spawning.

Managing non-native fish species

The Upper Colorado Recovery Program is working to recover endangered fish while also working to minimize the impact on non-native sport fishing. In the fall of 1996, federal and state wildlife agencies in Colorado, Utah and Wyoming finalized an agreement on stocking of non-native sport fish. The agreement specified the circumstances under which certain species of non-native fish can be stocked without harming endangered fish, specifying when non-native fish species can be routinely stocked, when stocking is prohibited, and when case-by-case reviews are required. These guidelines allow widespread stocking of trout and

stocking of a variety of warm-water fish species in seven reservoirs on the west slope of the Rocky Mountains totaling more than 10,000 surface acres.

Hatcheries and stocking

Hatchery facilities and ponds for raising endangered fish are available in five different sites in Utah and Colorado. Each of the facilities was established to meet specific objectives necessary to recover endangered Colorado River fish.

Improving the river habitat

One strategy being used to improve river habitat is to make riverside flood plain property accessible to endangered fish for feeding and for juvenile fish. In some cases, this involves removing dikes along the river to allow the fish to swim into adjacent wetlands.

In situations where no dikes exist, the approach may be to protect the property from development, ensuring it will continue to be available to the fish. River habitat also is being improved by building fish passageways and ladders around dams and other in-stream barriers, enabling endangered fish to migrate upstream and down. Additionally, screens are being installed on river diversions to minimize entertainment of fish.

History

In 1922, the seven Colorado River Basin states of Utah, Colorado, Wyoming, New Mexico, Arizona, Nevada, and California signed a compact dividing the Colorado River as Upper and Lower Colorado River basins. In 1948, the States of Wyoming, Colorado, Utah, and New Mexico, together with Arizona, signed the Upper Colorado River Basin Compact, an agreement apportioning the upper basin share between these states. The passage of the Colorado River Storage Project Act by Congress in 1956 authorized the construction of many large mainstem projects on the Colorado River and various tributaries, including Navajo Dam on the San Juan, Flaming Gorge on the Green River, Lake Powell on the Colorado River and the Aspinall Unit on the Gunnison River, in order to develop the waters of the Upper Colorado River Basin in accordance with the terms of the 1948 Compact.

While the construction of these federal projects was essential for the development of water storage and flood control and to allow the Upper Basin States to develop their water resources, their construction and operation altered natural river ecosystems, including native floral and faunal communities of the Colorado River. As a result, natural riverine habitats were altered, migration routes were blocked, and selective chemical treatments were applied to eradicate native species in favor of non-native sport fish species.

Each of these physical and biological changes to the environment, including modification of the natural flow regime and changes in water temperature and quality are what led to the endangerment of four native fish species of the Colorado River.

Other human-induced impacts, such as urban development, agricultural activities and watershed alterations have also affected the aquatic environments of the Colorado River drainage system. As noted, failure to recover the endangered species could result in limitations on cur-



rent and future water development and use in the Upper Basin states.

Sharing costs

The Recovery Program was historically funded primarily through federal appropriations and in-kind contributions by states and private entities. The landmark Public Law 106-392 signed on October 30, 2000 established a new cost sharing arrangement, which authorizes the Bureau of Reclamation to provide cost sharing for the capital construction projects for Upper Colorado Recovery Program and San Juan Recovery Program. Public Law 106-392 established finite appropriation ceilings for completing the construction believed to be necessary to recover the fish populations to the point where de-listing from the ESA occurs.

The law also authorizes the Bureau of Reclamation to use power revenues to provide \$6 million in “base” funding for the programs through the year 2011 — \$4 million for the Upper Colorado Recovery Program and \$2 million for the San Juan Recovery Program per year.

After 2011, power revenues may only be used to operate and maintain the capital projects and for monitoring, unless Congress authorizes additional funding.

The law also established cost-sharing mechanisms for construction of the capital construction portions of the two recovery implementation programs. The capital construction program includes facilities for the genetic conservation and propagation of the endangered fish species; for the restoration of floodplain habitat and fish passage; for regulation and/or supply of instream habitat flows; for preventing fish entrapment in canals; and

for the removal and/or relocation of non-native fish.

This law states that the Federal Government will pay \$46 million of the \$100 million total of authorized expenditures. Funding contributions from the four participating states and from the sale of Colorado River Storage Project hydropower would provide the remaining \$54 million of the program costs for the recovery programs’ capital construction projects. This would include state and power users’ costs that have already been or will be incurred.

Section 3(a) of Public Law 106-392 provides authorization of \$46 million in appropriated funds to the Secretary of the Interior (acting through the Commissioner of Reclamation) to be utilized for capital projects as defined in the Act. Further, the subsection provides that such funds are a non-reimbursable Federal expenditure. This authorization, as well as any other authority for the implementation of capital projects terminates for Upper Colorado River Basin projects on September 30, 2005.

Subsection 3(b) limits the total costs (Federal and non-Federal) of the capital projects to \$100 million; \$82 million for the Upper Colorado Recovery Program projects and \$18 million for the San Juan Recovery Program projects. Beginning in the fiscal year following enactment, the capital project authorized amounts shall be adjusted for inflation by the Secretary based on an appropriate economic index.

Subsection 3(c) of the subject Public Law authorizes the Secretary to accept contributed funds not to exceed \$17 million from the States of Colorado, Wyoming, Utah and New Mexico.

The Secretary of Energy, acting through the Western Area Power

Administration (WAPA), is authorized to use power revenues not to exceed \$17 million for capital projects. The power revenues are treated as a non-Federal contribution, are collected by WAPA pursuant to the Colorado River Storage Project, and are treated as reimbursable costs assigned to power for repayment under section 5 of the Act.

Subsection 3(f) authorizes the Secretary of the Interior to enter into agreements with Federal and non-Federal entities, to acquire and transfer interests in land, water and facilities, and to accept or give grants to carry out the provisions of this Act.

Utah’s participation

Utah’s portion of the capital cost sharing for the Upper Colorado Recovery Program is \$3.422 million — to be expended over the next 5 years. These funds will come from the ESMF fund with \$637,000 funds for capital projects this year and \$107,600 for operation and maintenance.

Utah’s participation in the ongoing success of the Recovery Program has resulted in 28 successful project Section 7 consultations under ESA covering 65,860 acre-feet in new depletions and 421,850 acre-feet of historic depletions in the Colorado River Basin.

The Recovery Program provides the reasonable and prudent alternatives for these projects and those to come in the future. A total of 141 projects involving 1,673,146 acre-feet of depletion in the Upper Colorado River Basin states of Colorado, Utah, and Wyoming have been covered under the Upper Colorado Recovery Program since its inception in 1988.

The success of the Program is vital to Utah’s Colorado River Water users and the Upper Colorado River Basin. Each year the U.S. Fish and Wildlife Service evaluates the progress of the Program and has issued a “sufficient progress” determination that allows current water use to continue.

june sucker recovery program

By Chris Keleher, June Sucker Recovery Implementation Program Recovery Coordinator, Central Utah Water Conservancy District

The Proposed June Sucker Recovery Implementation Program is a collaborative approach to endangered fish recovery and water development.



June Sucker

The June sucker (*Chasmistes liorus*) is unique to Utah Lake and its tributaries. Outside of where they are held in captivity, they are found nowhere else in the world. The June sucker was federally listed under the Endangered Species Act (ESA) in 1986.

The lower Provo River is the June sucker's only known spawning location. It was identified as "critical habitat" under ESA at the time of listing because the area was considered essential for the conservation of the species and would require special management considerations and protection. Reasons the June sucker was listed include its localized distribution, failure of individuals to survive to the adult life stage,

and multiple threats to its continued survival. The U.S. Fish and Wildlife Service, responsible for administering the ESA, designated June sucker as a species with a high risk of extinction, a low recovery potential, and one where recovery would be complicated because of the presence of conflict. The primary conflicts with recovering June sucker are water development and operations, and urbanization.

Early conditions of Utah Lake

Accounts from early explorations describe a pristine Utah Lake that supported tremendous populations of fish which, in addition to the June sucker, included Bonneville cutthroat trout (*Oncorhynchus clarki utah*) and eleven other species. The fish community of Utah Lake provided a reliable food source for Native Americans and early settlers in the unpredictable and harsh conditions of the desert.

As an indication of the size of these populations, early fisheries scientists reported "lake trout" (presumably, Bonneville cutthroat trout) that reached sizes of 8-12 pounds. It was considered nothing unusual to catch 30 to 40 pounds of trout in a single hour of fly fishing. In its current condition, it's hard to imagine that Utah Lake once supported a trout fishery of any kind, much less one that produced fish of the size and quantity referred to in early reports.

With the increase in the number of settlers and fishermen in the mid to late 1800s, the supply of fish diminished rapidly. The first commercial fishing permit was granted

by the City Council of Provo in 1866 allowing fish to be harvested from the lake and for one-half mile up Provo River. Enormous hauls of Bonneville cutthroat trout were taken from the Provo River, especially during the spawning period.

By 1872, the decrease in the yield of "lake trout" was roughly estimated at about one-third. The rapid decrease was likely due to over-exploitation and the laxness of the laws to protect and conserve the resource. The last Bonneville cutthroat trout from Utah Lake was captured in 1932.

Sucker (*catostomus* spp. and *chasmistes* spp.) populations in Utah Lake were equally as large. In the 1880s while accompanying one of the lake's first commercial fishermen, a visiting scientist declared Utah Lake "the greatest sucker pond in the universe" after their boat became stranded on a "shoal" of these fish.

In the late 1800s, close to one million (approximately 1650 tons) spawning suckers were killed when about 2 miles of the Provo River were de-watered for irrigation purposes. Hundreds of tons more suckers died when the lake nearly disappeared during the 1930s' drought.

When the native fish populations became depleted toward the close of the 19th century, it was recognized that some measures must be adopted to maintain the supply, primarily for the commercial value.

Rather than instituting regulations to protect native fish in Utah Lake, numerous introductions of non-native species were made with the hopes of ensuring a commercial fishery. By 1895, almost the total



commercial catch of fish consisted of introduced species.

Ecosystem changes

At the same time the biological components of the Utah Lake ecosystem were being altered, the physical nature of the valley was changing. Historically, Utah Valley had abundant pastures and wetland marsh communities filled with reeds and grasses. The lake level was relatively stable, which allowed for the growth of aquatic plants that provided important habitat for young fish.

A dam constructed at the outlet of Utah Lake in 1872 — along with a pumping plant in 1902 — changed the natural function of the lake to that of a storage reservoir. In addition, river habitat was far more abundant historically than it is today. One early map of the valley shows the Provo River forming a large delta of seven separate channels before entering the lake. Dams constructed to divert river water,

channelization to expedite water deliveries, and diking to provide flood control have had major effects on riverine habitat. The lake shoreline has changed considerably as dikes have been constructed and areas formerly covered by shoreline associated wetlands are pumped to provide opportunities for municipal and agricultural use. All of these habitat alterations contributed to declining trends in the native species which evolved in, and depended on, the natural conditions of the Utah Lake ecosystem.

Along with changes to the biological and physical nature of the ecosystem, Utah Lake was experiencing dramatic changes in water chemistry. As natural supplies of fresh water were diverted for irrigation purposes, salts leached from the soil and were carried by returning flows into the lake. Between 1883 and 1904 the chemical characteristics of the lake underwent a thorough transformation and the salinity of the lake more than quadrupled.

Such a transformation in water quality undoubtedly contributed to impacts on the fauna of Utah Lake. Elevated salinity levels are still a concern in Utah Lake today.

Of the thirteen fish species that originally inhabited Utah Lake, only two, June sucker and the Utah sucker (*Catostomus ardens*), are still present. One species, the Utah Lake sculpin (*Cottus echinatus*), occurred only in Utah Lake and is considered extinct with the last specimen collected in 1928.

Bonneville cutthroat trout are primarily restricted to headwater streams. The least chub (*Iotichthys phlegethontis*), native only to Utah and once abundant along the Wasatch Front, persists only in a small population in north Juab Valley and a few areas of the West Desert.

Bonneville redbside shiner (*Richardsonius balteatus hydroflox*), mottled sculpin (*Cottus bairdi*), leatherside chub (*Gila copei*), Utah chub (*Gila atraria*), speckled dace

June Sucker Research On The Provo River



(*Rhinichthys osculus*), longnose dace (*Rhinichthys cataractae*), mountain whitefish (*Prosopium williamsoni*), and mountain sucker (*Catostomus platyrhynchus*) are no longer in the lake, but still exist in tributaries.

Although water development, impacts to habitat and water quality, and introductions of non-native species are viewed as factors that contributed to the depleted status of the native fish fauna of Utah Lake, a collaborative effort is proposed to reverse the effects of over a century and a half of impacts for one of these species: the June sucker.

Proposed June Sucker Recovery Implementation Program

With the listing of June sucker as an endangered species, federal agencies managing and developing water were required to consider impacts to June sucker from proposed and ongoing water projects through consultation with the U.S. Fish and Wildlife Service.

Actions the U.S. Fish and Wildlife Service deemed necessary to minimize water project impact to the June sucker and their habitat were implemented, but resolution of conflicts between water needs of the growing human population and the needs of June sucker proved difficult.

There grew a general recognition that many of the threats to June

sucker recovery, such as impacts from non-native fish and habitat degradation, could not be addressed solely through water management. In order to make significant progress towards recovery and address the threats to June sucker recovery in an balanced manner, a cooperative multi-agency program was believed to be essential.

A collection of state, federal and private entities including the Utah Department of Natural Resources, U.S. Fish and Wildlife Service, Central Utah Water Conservancy District, Utah Reclamation Mitigation and Conservation Commission, U.S. Department of the Interior, U.S. Bureau of Reclamation, Provo River Water Users Association, Provo Reservoir Water Users Company, and outdoor and environmental interests, are proposing to join forces to implement actions to recover June sucker.

The proposed June Sucker Recovery Implementation Program (June Sucker Program) has two main goals: 1) to recover the June sucker so that it no longer requires protection under the ESA, and 2) to allow for the continued operation of existing water facilities and future development of water resources for human use in the Utah Lake basin.

The guiding document for the June Sucker Program is the June Sucker Recovery Plan (Recovery Plan) which was recently finalized

by the U.S. Fish and Wildlife Service. The Recovery Plan describes the current understanding of the species status, distribution and life history and identifies actions that need to be taken to proceed towards recovery.

For the purpose of the June Sucker Program, actions identified in the Recovery Plan have been grouped into general categories, referred to as recovery elements. The purpose of the recovery elements is to organize recovery actions by the threats they are intended to address, and to ensure a diversified and balanced approach to the implementation of recovery actions such that funding and effort is applied at the appropriate level for each threat. These recovery elements are:

- Habitat Development and Maintenance
- Water Management and Protection to Benefit the June sucker
- Genetic Integrity and Augmentation
- Research, Monitoring, and Data Management
- Information and Education
- Program Management

The approach is to initiate feasibility studies to develop recommendations to address the major threats to recovering June sucker. Based on recommendations, small-scale pilot studies will test and refine recommendations for large-scale projects. Prior to the implementation of large-scale projects, a review through the National Environmental Policy Act process will be implemented.

In order for federal agencies to continue to operate existing water projects as well as develop new projects in the Utah Lake drainage basin, progress towards the recovery of June sucker must be accomplished. The June Sucker Program provides an arena for agencies to work together and identifies an agreed-upon process to plan, fund, implement and evaluate June sucker recovery. This will facilitate water development and operations to meet the needs of the human population along the Wasatch Front.

Utah Prairie Dog

UTAH PRAIRIE DOG TRANSPLANTING EFFORTS



By Keith Day, DWR Southern Region
Native Wildlife Biologist

The plight of the Utah prairie dog (*Cynomys parvidens*) has been recognized by wildlife management agencies for more than 30 years. This species was accorded “endangered” species status in 1968 and was one of the first mammalian species to be protected under the Endangered Species Act (ESA) of 1973. The protection and attention gained through these actions and management efforts resulting therefrom helped the species rebound to the point that it was down-listed to “threatened” species status in 1984.

However, much remains to be accomplished before the Utah prairie dog can be considered recovered. The Utah Division of Wildlife Resources (Division) is one of about ten entities working diligently toward that goal.

Four species of prairie dogs can be found in 12 states between the Mississippi River and the Rocky Mountains, three of these in Utah. The Utah prairie dog is unique in that it is found only in a 10-county area of southwestern Utah; making it the western-most prairie dog found in the United States and the

one with the smallest range. An estimated 95,000 Utah prairie dogs existed in the 1920s, but only 5 to 6,000 survive today. Their decline has been attributed to extensive control programs (mostly poisoning) prior to 1968, habitat changes following the introduction of livestock and agriculture, urbanization and introduction of the non-native sylvatic plague bacterium.

Since federal listing, Utah prairie dog recovery has focused on protecting and enhancing existing habitats and creating new, secure habitats to which prairie dogs can be moved to propagate new colonies. Trapping Utah prairie dogs from private lands and transplanting them to secure habitats on public lands began in 1972 and has resulted in the relocation of over 18,000 animals. Some transplant operations have met with success, but many have not fared well.

The transplant program has been adjusted numerous times to improve success of establishing new colonies. Specifically, much more attention is now given to making new habitats suitable to support Utah prairie dogs than had been in the past. Creating new habitats and improving conditions in existing habitats are expensive and require

considerable labor and project coordination. Many variables must be considered when enacting a recovery project. Recently, the Utah Prairie Dog Interim Conservation Strategy was enacted by the various parties involved in recovery efforts to research and develop methods for improving recovery programs. At about the same time, the Habitat Conservation Plan for Utah Prairie Dogs in Iron County, Utah came into effect. This document has been designed to better coordinate the issues of loss of habitat and animals due to human development and recovery efforts.

As with any large-scale operation, funding has always been an important issue in the Utah prairie dog recovery program. Coordination of recovery actions has not always been easy because, numerous federal, state and private entities have been involved. Availability of money for Utah prairie dog recovery has varied from agency to agency and from year to year. With the creation of the Endangered Species Mitigation Fund (ESMF) by the Utah State Legislature in 1998, new opportunities for pursuing Utah prairie dog recovery actions arose. Monies from this fund have already benefitted Utah prairie dog recovery in several ways.

Because Utah prairie dog recovery efforts involve so many different entities, it is important to have adequate coordination of activities and sharing of information. Typically, personnel in the Division's Southern Region have attempted to fulfill this roll while maintaining numerous other programs.

It was not until 1998 that the Division was able to dedicate a specific position to coordinate Utah prairie dog monitoring, data collection, information and education between the various agencies and

the public. The capabilities of this Utah Prairie Dog Biologist position have been enhanced by the infusion of money from the ESMF. These monies have been used to purchase and maintain equipment necessary to conduct trapping and translocation operations, to assist in collecting information on location and distribution of prairie dog colonies, and upgrade mapping equipment and techniques. As the program expands, the fund will likely be used to hire field personnel to assist the biologist.

As noted before, the Division is not pursuing recovery of Utah prairie dogs alone. The U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Land Management (BLM) National Park Service (NPS) and USDA Forest Service (USFS) are each pursuing recovery within their own organizational framework. As no one agency is capable of funding all recovery actions alone, ESMF monies have been allocated to support their efforts as well.

In conjunction with Garfield County, the Division used ESMF funds as a match to obtain a National Fish and Wildlife Foundation grant for Dixie National Forest's Powell Ranger District. This grant money will be used by Powell Ranger District to improve existing and to create new Utah prairie dog habitats: projects which had been planned, but for which insufficient funds were available. Another siz-

able appropriation was made for the purchase of a large Utah prairie dog colony located on private agricultural ground in the Parowan Valley. This purchase was a cooperative effort of USFWS, the Nature Conservancy, Iron County and the Division. Protection of existing colonies and habitats on private lands has not been as high a priority as programs on public lands, but protection of such colonies may be instrumental in recovery of this species.

The need for research into Utah prairie dog biology, habitat needs, population viability and transplant techniques has been recognized in the Utah Prairie Dog Interim Conservation Strategy. Several aspects of the overall research program, which will last at least three years, began in 2001. ESMF funds are likely to play a key role in accomplishing research goals. The Division is already assisting researchers from USGS Biological Research Division in studies of transplant techniques and impacts of sylvatic plague.

Currently, the Division and the BLM are pursuing a cooperative agreement to fund additional research into the relationship between grazing and successful development of new Utah prairie dog colonies. Part of the Division's contribution to this project will include ESMF appropriation.

Appropriations from ESMF for Utah prairie dog recovery actions do not just benefit state and federal agencies, however. The purchase of the Utah prairie dog colony near Parowan has benefitted Iron County by advancing its obligations under the Habitat Conservation Plan for Utah Prairie Dogs in Iron County.

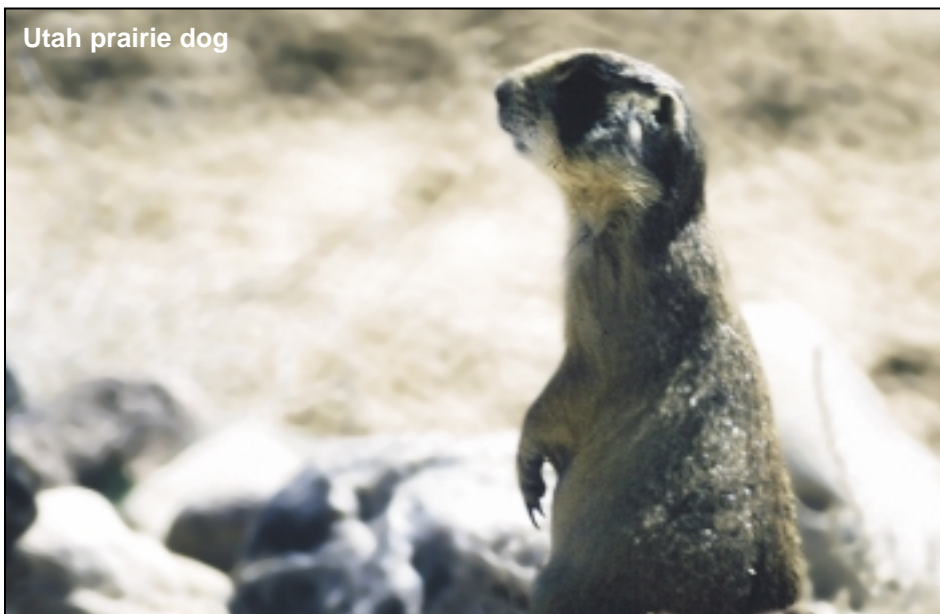
Preservation of this colony has mitigated the loss of habitat elsewhere in the County and provided needed relief for development. Another benefit in Iron County has been an appropriation to Southern Utah University to assist in Utah prairie dog study and control at the University's Valley Farm. The University is using this money to develop and study methods for maintaining Utah prairie dogs in an agricultural setting while maintaining the necessary agricultural use of the land.

Knowledge gained from this program will be passed on to the agricultural community through Valley Farms' education/outreach programs. Appropriations from the ESMF have also been used to assist Garfield County in developing its own Habitat Conservation Plan.

Garfield County itself has received funds that will help it meet the commitments it makes under the new plan and the Division has used ESMF funds to fund personnel assisting Garfield County in this endeavor.

Utah prairie dog recovery efforts are shifting into high gear. Critical research into improved methodology has begun and projects are being expanded into new areas. Numerous management agreements are being negotiated and are expected to be in effect by the end of 2002.

Regardless of how many recovery program projects are planned and how exemplary they may be, implementation and the recovery they promise cannot occur without adequate funding. In a day when so many valuable wildlife projects exist, but funding is limited, the availability of sources such as the ESMF become critical to achieving recovery of Utah prairie dogs.



Utah prairie dog

Bonneville

Cutthroat

...in the Deep Creek Mountains

by Charlie Thompson,
DWR Central Region Aquatics Manager

We have been working with Bonneville cutthroat trout (*Oncorhynchus clarki utah*) since they were discovered in Trout Creek on the Deep Creek Mountains in 1975. Until 1975, it was thought that Bonneville cutthroat trout no longer existed anywhere in Utah. The discovery and then the attempts at recovery have been a constant uphill battle.

Gradually through the late 1970s we began to squeeze time into our work plan to begin investigations of the populations in the area. We encouraged the work of a graduate student program and the seven streams on the east side of the Deep Creek Mountains were surveyed. It was found that pure Bonneville cutthroat trout existed only in the headwaters of Trout Creek. The remaining portion of Trout Creek and the other six streams contained rainbow-cutthroat trout hybrids. There existed about 1 mile of stream and approximately 1200 of these ancient Lake Bonneville cutthroat trout.

Each spring we traveled to Trout Creek and monitored the fish populations. Time of spawning was determined and eggs were collected and moved downstream and into Birch Creek where they were placed in vibert baskets and buried in the stream bottom to hopefully hatch.

We began to see results as populations began to slowly expand in both streams. Then in the mid 1980s we found rainbow hybrids back in both streams. They had been illegally introduced and we had to re-treat the two streams and start over.

This time following eradication we moved adult fish and also set up streamside incubators along the streams where eggs could be placed and hatched. Success was very slow. We established a small building adjacent to Red Cedar Corporation's reservoir and tried to hatch and raise the fish there.

To maintain genetic integrity we crossed sperm from one male with eggs from one female and hatched these eggs in individual jars. Fertility was poor. If we only got ten fry from one female then we only keep 10 fry from any other mating. This may have been good for genetic integrity, but it resulted in the production of very few fish. Two years in a row we were able to produce about 25 fish for restocking. We discontinued this effort after two years.

We then decided that the only way to prevent future illegal stockings was to treat all the remaining streams and remove hybrids entirely from the area. We put this proposal together and began a public meeting process to gain support. We did not get support. People in the area were opposed to the treatment because we had not restored Bonneville cutthroat trout well enough in Trout and Birch Creeks to satisfy what they felt was good fishing.

We compromised by agreeing to open Trout and Birch Creeks to fishing and only treating two additional streams and reestablishing cutthroat in them before we treated the remaining two streams. An angler survey was completed 1998 and during the summer months the estimated fishing pressure was 163 hours fishing (41 angler days) and 18 trout were harvested. No fishing occurred in Trout, Birch or Toms Creeks.

In 1999, we treated Granite and Red Cedar Creeks and restocked Granite Creek with 82 fish from Buck Douglas's pond. We started a cooperative project with Buck Douglas at the Douglas Ranch to raise cutthroat trout in some small ponds he had constructed for private fishing. Fish were moved into his pond from Trout Creek, their eggs were collected, and fish were hatched and raised in his pond. We were not successful in raising any fish for stocking in 2000 but were successful in stocking 44 fish into Granite Creek in 2001.

The next step was to acquire funding to create another small pond culture



Bonneville cutthroat trout



Electro shocking for cutthroats

system at the Red Cedar Corporation Reservoir because they approached us asking if they could help in the restoration activity. We want to increase our production capabilities so we would have additional fish to stock into Granite, Red Cedar, Tom's, Indian Farms and Basin Creeks. The proposal was funded with Endangered Species Mitigation Funds. This project will help do exactly what mitigation funds are supposed to do, ensure the recovery of the species and protect the local landowners rights to use their water.

Recently, I took Mike Talbot from the Division of Water Resources to the site where we met with the landowner, Glenn Allred and discussed the design and timing of the project. Mike will be developing the plans for construction of a dike, water drain and spillway in the next couple of months and the dike will be constructed this winter. Culture tanks and enclosures will be purchased and installed before spring. If everything goes according to plan we will be able to move fish into the pond next spring (2002) and begin culturing eggs and raising fry.

Acquisition of **Lake Canyon Lake**

*Helps Ensure
a Bright Future For
Colorado River
Cutthroat Trout*

*By Kirk Mullins, DWR
Northeastern Region
Aquatics Biologist*



The Utah Division of Wildlife Resources (Division), with the help of the ESMF funds and The Nature Conservancy will be able to begin the purchase of Lake Canyon Lake, although the sale agreement will not be finalized until October of 2001. Lake Canyon Lake will be purchased to develop a brood population of Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), for stocking numerous waters throughout the North Tavaputs Plateau region in northeastern Utah.

The purchase agreement allows the seller to continue to graze the property, including the stream above the lake, through the fall of 2002. Because of this, efforts to

develop Lake Canyon Lake into a brood lake for Colorado River cutthroat trout will not begin in earnest until late fall 2002.

The Colorado River cutthroat trout, the only trout native to northeastern Utah, historically thrived in most drainages across the Uinta Basin. Because of the introduction of non-native fish species, de-watering of streams and riparian degradation, the range and numbers of Colorado River cutthroat trout have been reduced to the point where some individuals petitioned the U. S. Fish and Wildlife Service (USFWS) to list the species as threatened or endangered under the Endangered Species Act (ESA).

In 1995, the Division and other agencies including the USFWS, the USDA Forest Service (USFS) and the Bureau of Land Management (BLM) began the process of developing a conservation agreement for the preservation and enhancement of the native Colorado River cutthroat trout within Utah. This agreement was finalized in March 1997. One component of the agreement is the Colorado River cutthroat trout Conservation Strategy, an annually updated plan outlining actions to be completed over the next 10-15 years by the signatory parties. Activities include: identifying populations of Colorado River cutthroat trout, determining their genetic purity, searching for reintroduction sites,

developing brood populations, implementing habitat enhancement, controlling non-native fish, reintroducing Colorado River cutthroat trout, and monitoring populations.

The conservation agreement divides the northeast region of Utah into three geographical sub-units: 1.) the north slope of the Uinta Mountains, 2.) the south slope of the Uinta Mountains and 3.) the North Tavaputs Plateau. In 1995, the Division began the process of developing Sheep Creek Lake into a Colorado River cutthroat trout brood lake for the south slope of the Uinta Mountains. We may have a suitable lake to develop a brood population of Colorado River cutthroat trout for the north slope of the Uinta Mountains. Lake Canyon Lake appears to be ideal for a Colorado River cutthroat trout brood lake for the North Tavaputs Plateau.

Since 1995, the Sheep Creek Lake Colorado River cutthroat trout brood population has increased from 500 to over 8,000 fish. In 1999, after several years of necessary disease testing, Sheep Creek Lake was certified disease free. This allows the Division to take eggs, raise them in the hatcheries and later stock over 68,000 Colorado River cutthroat trout into 55 lakes across the south slope of the Uinta Mountains. In 2000, seven Uinta Mountain south slope lakes were stocked with several thousand Colorado River cutthroat trout, along with follow up stocking on some of the 55 lakes stocked in 1999. Additional stocking will occur annually.

The acquisition of Lake Canyon Lake and the 2 miles of stream above the lake will make it possible for the Division to reintroduce Colorado River cutthroat trout into at least 40 miles of streams on the North Tavaputs Plateau region. This will go a long way in our efforts to re-establish and expand the range of Colorado River cutthroat trout in Utah, and in the process, eliminate any future need to list the species under ESA.

Colorado River Cutthroat Trout

by Floyd Bartlett, DWR Northeastern Region Aquatics Biologist

In October of 1999, Colorado River cutthroat trout were given a chance to be reestablished in the Uinta Basin. Roughly 68,000 fingerlings were airlifted by the Division to 55 lakes on the South Slope of the Uinta Mountains. In 2000, seven more lakes received fingerlings and several of the original 55 lakes received supplemental stocking. Money from ESMF matched a grant with the National Fish and Wildlife Foundation's Bring Back the Natives' sub program to provide funds to the Division and the Ashley National Forest to monitor Colorado River cutthroat trout populations in Uinta Mtns' lakes.

Colorado River cutthroat trout once thrived in the drainages of the Green and Colorado rivers. Competition and interbreeding with introduced exotic fish; dewatering of streams; riparian degradation; and agricultural, industrial and municipal wastes dramatically reduced habitat and Colorado River cutthroat trout population in Utah, Colorado and Wyoming.

After independent efforts identified genetically pure populations, the states banded together to develop a conservation agreement to expedite the implementation of conservation measures.

In Utah, aerial stocking of approximately 70 lakes was discontinued for 10 years awaiting a source of

native trout. Beginning in 1995, roughly 500 fish a year from a small, South Slope stream were collected and transported to Sheep Creek Lake.

After several years of disease testing, the survivors and the lake were declared disease free and became the first of the South Slope Colorado River cutthroat trout brood stock. In the spring of 1999, biologists collected and fertilized Colorado River cutthroat trout eggs and transported them to a Division fish hatchery near Logan, Utah.

The monitoring efforts funded by the ESMF began in the summer of 2001. Gill nets are set for a short period of time in selected lakes. Biologists and volunteers record and evaluate the abundance, growth rates and condition of the fish. Preliminary results are excellent. Two-year old Colorado River cutthroat trout have been located in 20 of 24 lakes inventoried through the first week of August. The biologists are reporting the populations are healthy and the fish are growing well. Approximately 20 additional lakes were sampled in August and September, 2001.

It is hoped, the return of these native fish and the excellent results of their reestablishment into South Slope waters will eliminate any future need to list the species as threatened or endangered.



GUNNISON Sage-Grouse

by Dean Mitchell
Upland Game Program Coordinator
Utah Division of Wildlife Resources



The Gunnison Sage-Grouse strutting

Sage-grouse (*Centrocercus spp.*) are Utah's largest native grouse species. Male birds can weigh up to 7.2 pounds, while female sage-grouse can weigh up to 4 pounds. Utah sage-grouse inhabit sagebrush-dominated habitats from 4,000 to over 9,000 feet in elevation in mainly the Great Basin and the Colorado Plateau geographic regions. Unlike other gallinaceous (chicken-like) game birds such as pheasants or turkeys, sage-grouse lack a well-developed muscular gizzard to process food. As a result, sage-grouse eat soft foods such as the leaves of sagebrush. Ninety-nine percent of the sage-grouse winter diet consist of the leaves of sagebrush. As such, sage-grouse are considered to have an obligatory relationship with sagebrush. Where there's no sagebrush, there are no sage-grouse. Sage-grouse are found only in western North America — no where else in the world.

In 2000, the American Ornithologist's Union, officially split sage-grouse into two species; the Greater Sage-Grouse (*Centrocercus urophasianus*) and the Gunnison Sage-Grouse (*Centrocercus minimus*). Both species inhabit Utah. The Greater Sage-Grouse is found north and west of the Colorado River, while the Gunnison Sage-Grouse is found only south and east of the Colorado River, mostly in San Juan County.

The Gunnison Sage-Grouse is much smaller than the Greater Sage-Grouse. Male Gunnison Sage-Grouse weight from 3.5 to 5.0 pounds with females weighing from 2.4 to 3.1 pounds. Gunnison Sage-Grouse have different feather colorations (distinct horizontal white barring on tail feathers) and different feather characteristics ("pony tail" filoplumes) than Greater Sage-Grouse. Gunnison Sage-Grouse also exhibit different strutting and vocalization behaviors and are also unique genetically from the Greater Sage-Grouse.

Historical Distribution

Early pioneer journals suggest that sage-grouse were abundant in the early 1800s in Utah. Historically, it is believed that portions of all 29 counties in Utah provided adequate habitat for sage-grouse.

Current Distribution

It is estimated that sage-grouse occupy only 50 percent of their historic habitat and are one-half as abundant as they were prior to the arrival of settlers in 1847. Habitat loss, fragmentation and degradation are suspected as the main causes of population decline. Large fragments of sage-grouse habitat have been lost throughout Utah to agriculture and urban development that eliminate sagebrush. Thousands of acres of sage-grouse habitat

have been converted into dense stands of exotic cheat grass (*Bromus tectorum*) by uncharacteristic wildfire and are now unsuitable for sage-grouse.

Currently, sage-grouse are found in 26 counties with birds actively counted in 20 counties. Sage-grouse have been extirpated in Davis, Salt Lake and Washington counties. The largest populations are found in western Box Elder County, Rich County, Blue and Diamond Mountains (Uintah County), and on the Parker Mountain (Wayne County). Other smaller populations are found scattered in the central and southern parts of the state.

Sensitive, Threatened and Endangered Status

Sage-grouse are listed on the Utah Sensitive Species List as a Species of Special Concern because of declining populations and limited distribution. The estimated breeding population size of sage-grouse in Utah is just over 14,000 birds. On January 26, 2000 the U. S. Fish and Wildlife Service (USFWS) received an “emergency listing” petition to list the Gunnison Sage-Grouse as endangered under the Endangered Species Act (ESA). The following groups filed the petition: American Lands Alliance, Net Work Associates, The Larch Company, Biodiversity Legal Fnd., Wild Utah Forest Campaign and Sinapu.

Prior to the petition being submitted, the USFWS was looking closely at Gunnison Sage-Grouse populations. In the Gunnison Basin of southwestern Colorado, there are some 2,500 to 3,500 Gunnison Sage-Grouse, whereas in San Juan County, Utah there are only some 200-300 birds remaining. As such, the USFWS had taken prior steps to place the Gunnison Sage-Grouse on the ESA's candidate species list.

San Juan County Gunnison Sage-Grouse Local Working Group

In 1996, the Utah Division of Wildlife Resources (Division), Utah State University Extension Services and the San Juan County

Commission formulated the San Juan County Gunnison Sage-Grouse Local Working Group (SWOG). SWOG was formed to identify and implement community-based conservation strategies to reverse the decline of Gunnison Sage-Grouse populations in San Juan County. SWOG agreed to work collectively to implement appropriate management actions and activities that represent the consensus of all stakeholders.

The SWOG Conservation Plan identifies a 230,000 acre conservation area that consists of potential Gunnison Sage-Grouse habitat. A core conservation area of 65,000 acres has also been identified. The core conservation area currently holds remaining Gunnison Sage-Grouse populations in San Juan County.

Strutting grounds or leks are areas that sage-grouse congregate on each spring for strutting and mating activities. A strict hierarchy for mating is found on each strutting ground. A dominant male sage-grouse known as the master cock does most of the breeding, while dominant, guard and outsider cock birds are also found on leks. Sage-grouse have a very strong affinity for returning to the same strutting ground year after year. Because of this strong bond, it's imperative that the habitat associated with strutting grounds be protected and managed to allow the sage-grouse population to perpetuate.

In San Juan County, there are a total of only 5 strutting grounds remaining. One of the population objectives identified in the conservation plan is to reestablish a mini-

mum estimated spring breeding population of 225-315 birds with 5-7 active lek areas each containing a 3-year count average of 15 males per lek over a 10-year period beginning March 1999. All lek sites would be protected from future risk through leases, conservation easements or fee title purchase.

First Lek Protected Through a Conservation Easement

In 1999, SWOG members began negotiations with a private landowner in San Juan County to secure a conservation easement on 2, 245 acres of land fostering one of the last remaining Gunnison Sage-Grouse strutting grounds. The acreage harbors large blocks of intact big sagebrush preferred by sage-grouse. The idea of SWOG securing a conservation easement versus a fee title acquisition of the acreage was much more palatable to local citizens and governments. This particular acreage is located within the 65,000 acre core conservation area identified in the conservation plan. It was also adjacent to public lands administered by the U. S. Bureau of Land Management (BLM). Adjacent BLM lands harbor a “satellite” strutting ground or an area that grouse will use on occasion to conduct mating activities.

Total cost for the conservation easement was \$337,000. A variety of partners including a pipeline company, the USFWS, The Nature Conservancy, the Division and the Endangered Species Mitigation Fund (\$164,877) cooperated to amass enough funding to complete the conservation easement.



Canada Lynx Forest Carnivores



by Kevin Bunnell, BYU Research Associate and
Dr. Jerran Flinders, BYU Professor of Wildlife Ecology

The Brigham Young University (BYU) Canada Lynx/Forest Carnivore Study began in the winter of 2000 following the listing of Canada lynx (*Lynx canadensis*) as “threatened” under the Endangered Species Act (ESA). This study has the following objectives: 1.) Determine if Utah (specifically the Uinta Mountain Range) still maintains a viable population of Canada lynx. 2.) Conduct a thorough habitat/prey base suitability analysis that will provide the Utah Division of Wildlife Resources (Division) with the information needed to manage a resident Canada lynx

population or to determine the feasibility of a reintroduction effort if it is determined that the resident population has been extirpated. 3.) Conduct a general survey of the forest carnivore populations within the Uinta Mountains providing the Division with information on a possible wolverine (*Gulo gulo*) population and the general status of the resident cougar (*Felis concolor*), bobcat (*Lynx rufus*), black bear (*Ursus americanus*), American marten (*Martes americana*), coyote (*Canis latrans*) and red fox (*Vulpes vulpes*) populations.

The study is part of a large effort to determine the status of Canada lynx throughout the western United States by using the National Lynx Detection Protocol as a basis for study design. The study is closely coordinated with the Uinta, Ashley and Wasatch/Cache National Forests, the Division, and U.S. Fish and Wildlife Service who provide monies, equipment and logistical support to the study in addition to the



Canada Lynx

funding by the Endangered Species Mitigation Fund (ESMF).

To date, this study has collected 60+ hair samples from the Uinta Mountains for DNA analysis (the method used by the National Lynx Detection Protocol). During the 2000 field season, 23 samples were collected and analyzed. These samples detected all the forest carnivore species above except Canada lynx and wolverine.

Hair samples collected in 2001 will be analyzed at the end of the summer with results most likely available in October. It is anticipated that the 2001 sample size will be at least double the 2000 sample — increasing the probability that if Canada lynx or wolverine are present, they will be detected. In addition, 63 sites have been established (primarily within the High Uintas Wilderness Area) to sample habitat conditions and population levels of snowshoe hare (*Lepus americanus*) and red squirrels (*Tamiasciurus hudsonicus*), the primary prey of Canada lynx.

The National Lynx Detection Protocol requires national forests within the historic range of the Canada lynx determine if lynx are still present. This must be done through three consecutive years of surveys. Until then, each national forest is required to direct management as if Canada lynx are present. The ESA and a national Canada Lynx Conservation Agreement and Strategy provide direction for the conservation of the lynx.

Spotted Frog



Spotted

Frog Habitat Management Plan for the San Pitch and Spanish Fork River Drainages

By Krissy Wilson, DWR Central Region Native Aquatic Biologist

Spotted frog (*Rana luteiventris*) has experienced serious population and distribution declines. The species has been extirpated from the majority of historic habitats and currently persists in Utah in only a few isolated spring com-

plexes in Utah’s West Desert and along Utah’s Wasatch Front. Many of the extant populations are small and have recently experienced further declines. Threats to spotted frog include degradation and loss of habitat, predation and competition from the introduction of non-native wildlife species. To reduce these threats and reverse the population declines, the Conservation Agreement and Strategy for

Spotted Frog in Utah was developed in 1998. Habitat protection and enhancement in the San Pitch and Spanish Fork River drainages is the highest priority action under this agreement.

A single spotted frog population, near the town of Fairview is currently known to occur in the San Pitch River drainage. Two populations are currently known to occur in the Spanish Fork River drainage. With so few populations in these drainages, it is important to protect currently occupied habitat and also expand populations into new areas.

Because almost all spotted frog breeding areas are under private ownership, development of conservation easements will be critical to

the protection of spotted frog in this area. In 2001, a spotted frog habitat management plan was developed for the San Pitch River drainage. The plan outlines priority units for habitat protection and enhancement. For this project, the habitat management plan will be partially implemented through the purchase of conservation easements and habitat enhancement actions. A similar plan will be developed this year for the Spanish Fork River drainage and implementation of the plan will occur in future years as funding is made available.

Activities planned for the 2001-2002 fiscal year include implementation of specific activities outlined in the Habitat Management Plan in the San Pitch drainage and development of a Habitat Management Plan to protect and enhance spotted frog habitat within the Spanish Fork River drainage. Other objectives include:

San Pitch drainage

- Work cooperatively with landowners on a voluntary basis to develop conservation easements.

The easements will also protect and enhance movement corridors between habitats.

Modifications may be necessary at some locations to enhance and improve spotted frog habitats and may include: planting native wetland vegetation, enhancement of canopy cover, addition of structure, reduction in bank slope, and it may be necessary to restrict livestock grazing during the breeding season which is a 5- to 6-week period in March through April).

- Examine feasibility and methods to eradicate or control negative interactions with non-native wildlife species that are predaceous upon spotted frog and compete for resources.

Spanish Fork drainage

- Identify occupied habitat, potential habitat, and potential movement corridors.
- Identify opportunities for habitat protection and potential reintroduction.
- Prepare a habitat protection strategy. When occupied habitat and potential spotted frog habitat



has been identified, landowners will be contacted to explore possibilities for land purchases, conservation easements, and/or alteration of current land use to benefit spotted frog.

These projects will significantly reduce threats, reverse the population and distribution declines, and consequently improve the status of spotted frog. Implementation of these projects will demonstrate that wildlife conservation can occur with the support and the cooperation of the public. The spotted frog conservation agreement was developed as a collaborative effort among resource agencies and private landowners.

Monitoring Bat

by Mark R. Mesch, Division of Oil, Gas and Mining Program Administrator, Abandoned Mine Reclamation Program

Gated mines as conservation refugia for bats?

An evaluation of bat compatible closures as a species protection measure at gated mines in Utah.

Bat populations may be declining, but trends for many species are unclear because of a lack of detailed data. Fifty-six percent of the bat species that occur in the U.S. are listed as endangered or are considered candidates for listing under Endangered Species Act (ESA). None of Utah's bat species are currently protected by the ESA. However, seven species are considered state sensitive.

Abandoned mines appear to be increasingly used as roost sites by cave dwelling bats. Of Utah's 18 bat species, 14 regularly occur in abandoned mines.

In Utah, the Abandoned Mine Reclamation Program seals abandoned mines to protect the public. Mine closures are preceded by internal bat surveys to avoid entombing bats or destroying bat roosts. Based on the information from these surveys, mines may be sealed with a bat compatible gate that allows bats continued use of the habitat. For

example, Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), a state sensitive species, is widespread but uncommon in Utah. This bat, as well as others, is extremely dependent on abandoned mines for roosting habitat. Although little post-gate monitoring data exists to provide supporting evidence, utilizing bat compatible gating at aban-



The Bat Gate



doned mines should allow bats continued access into the mines, and may in fact be an effective mitigation technique for conserving cave dwelling bat populations.

Through a grant from the Endangered Species Mitigation Fund, the Abandoned Mine Reclamation Program is using Southern Utah University students and Division biologists to survey gated and un-gated mines by making comparisons; we try to answer the question of how these gates affect bats, bat behavior, and ultimately bat populations. This research is being carried out using a combination of high tech night vision equipment, including night vision goggles and infra red digital camcorders, bat call detection devices, event recorders, tempera-

ture data loggers and bat trapping techniques.

Additionally, the researchers are measuring changes in populations and bat species composition in the mines, colonizing behavior and roost fidelity. Analysis of this bat gate monitoring data will lead to more robust gate designs, management protocols to help conserve bat populations, important information on roosting behavior, and an increased knowledge of daily and seasonal activity patterns for cave dwelling bats in Utah.

Ultimately, results may show that gated mines may become conservation refugia for many of Utah bat species, thus preventing the need to ever have these bats appear on the endangered species list.

by Eric Stucki, Assistant Manager/Acting Park Manger, Coral Pink Sand Dunes State Park



Tiger Beetle

OF THE CORAL PINK SAND DUNES

Coral Pink Dunes



CAN AN OFF-HIGHWAY VEHICLE (OHV) ENTHUSIAST AND A CANDIDATE FOR A THREATENED SPECIES LISTING COEXIST IN THE SAME AREA?

On February 28, 1996, land managers of the Coral Pink Sand Dunes were faced with this controversial issue. The Coral Pink Tiger Beetle, (*Cicindela limbata albissima*) not found anywhere else in the world, was a candidate for listing under ESA as an endangered or threatened species in an OHV enthusiasts paradise.

The land managers were faced with the dilemma to protect the tiger beetle and close the OHV riding areas or ignore the tiger beetle

and leave OHV areas open. The delicate issue was taken to an open public process with Utah State Parks and Recreation, Kane County, U.S. Fish and Wildlife Service and the Bureau of Land Management. A conservation strategy and agreement was prepared which identified necessary management action for the tiger beetle.

As a result of actions taken in implementing the agreement, the need to list the tiger beetle has thus been avoided. Development of this agreement promoted conservation of the Coral Pink Tiger Beetle and formed a partnership between the involved agencies and public. The conservation agreement provided approximately 200 acres in the Coral Pink Sand Dunes State Park

for non-motorized activities. This area placed most of the tiger beetle's habitat within a restricted area. It is anticipated that adequate protection of this unique species and its habitat would occur. The closure provides an area for non-motorized users.

It was discovered that having a non-motorized area decreased foot traffic on the dunes open to OHV's and therefore increased safety. By adequately addressing safety concerns, ecological and biological resources issues, Coral Pink Sand Dunes State Park can continue to be managed for a variety of recreational activities.

The conservation efforts in the state park have complimented similar activities taken on the U.S. Bureau of Land Management portion of the sand dunes. This conservation area has provided an excellent way to monitor the Coral Pink Tiger Beetle's population and growth. Dr. C Barry Knisley, Department of

Biology, Randolph-Macon College, Ashland, Virginia monitors the status of the tiger beetle through biannual counts and habitat suitability. Over the past several years, by protecting the habitat and tiger beetle, the population of the tiger beetle has stayed consistent. The 200 acres have given the opportunity for land managers to consider the possibility of varied factors that determine the population fluctuation of the beetle.

Studies over several years, are showing the possibility that other factors such as climate and weather may affect the tiger beetle and OHV impacts may have less of an impact as reported. For the motorized user the protection of the Coral Pink Tiger Beetle meant 200 acres of vegetated area was given to ultimately save the dunes. The OHV users now have 1,200 acres of open sand dunes, with a corridor between a



mountain range and the conservation area. This corridor allows the OHV user to ride the dunes from end to end. Through the land managers efforts in implementing the conservation agreement, the Coral Pink Tiger Beetle has not been listed as an endangered or threatened species.

Therefore it has been shown that an OHV enthusiast and a candidate for the threatened species listing can coexist in the same area.

Boreal toad

by Todd Hogrefe, DWR
Native Aquatic Species
Biologist

Boreal toad (*Bufo boreas boreas*) has experienced serious

declines throughout much of its range.

Recently, the populations in Wyoming, Colorado, and New Mexico have been extirpated from many historic habitats. The toad is a candidate species for listing under the Endangered Species Act (ESA). In Utah, an apparent distribution decline prompted the Utah Division of Wildlife Resources to classify boreal toad as a "sensitive" species. Although boreal toad was previously common throughout Utah's Wasatch Front, the Uinta Mountains and high elevation areas in Utah's West Desert, the current, known boreal toad distribution in Utah is restricted to a comparatively small number of habitats in Box Elder, Cache, Rich, Piute, Sevier, Wayne, Garfield and Kane counties.



Endangered Species Mitigation Funds are being used in conjunction with federal funds to develop a management plan for the Utah boreal toad populations. The objective of this effort is to outline an approach to reduce threats and maintain populations throughout the current distribution. By initiating this effort now, before boreal toad populations become seriously reduced, it is expected that any potential future need to list the Utah boreal toad populations under ESA will be significantly reduced.

The management plan is being developed through completion of three tasks. The first task includes assessment of Utah boreal toad populations by defining current distribution, determining habitat requirements, and identifying localized threats. Prior to this planning effort, boreal toad surveys had focused on a small number of areas in northwestern and southwestern Utah. An expanded survey effort is being undertaken throughout the Utah distribution and will likely discover additional populations. With each new population that is discovered,

Searching For Boreal Toad



the ability to demonstrate that boreal toad in Utah is not warranted for listing under ESA will be improved.

The second task involves summarizing information relevant to the biology, status, and management of the species. This summary is currently being compiled, and includes

information for species taxonomy and morphology, habitat requirements and life history, distribution and population trends, ongoing management actions, and threats to the species. The third task involves developing a management strategy based on the information provided

through completion of the first two tasks. Quantifiable population conservation goals will be established. To achieve these goals, the strategy will describe specific actions for habitat protection and enhancement, non-native species control, range expansion, and population monitoring.

Although this project is designed to determine and improve the status of boreal toad, it may benefit other native Utah species, including the state sensitive Bonneville cutthroat trout (*Oncorhynchus clarki utah*) and Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), as well as many other native fishes, amphibians and invertebrates.

Therefore, while conserving boreal toad, we may also reduce threats to other species, and reduce the need to list them as threatened or endangered under ESA.

Leatherside Chub

by Todd Hogrefe, DWR Native Aquatic Species Biologist

Leatherside chub (*Gila copei*) is a small minnow species with a limited distribution. The entire range of the species is confined to western Wyoming, southern Idaho, and portions of Utah. In Utah, populations occur in two distinct regions. The larger, and better described population (southern population) is found in the Utah Lake drainage, Provo River drainage and Sevier River basin. This population has experienced declines in the last 100 years, apparently due to habitat loss and predation by non-native fish.

A second population (northern population) occurs in the Bear River



Electro-shocking

drainage. The northern population is not as well described, but appears to include fewer individuals than the southern population. Because of small and declining populations, the Utah Division of Wildlife Resources has classified leatherside chub as a sensitive species.

Recent research suggests that the two populations of leatherside chub may, in fact, be two distinct species.

A separation into two species, combined with potential declining population trends, would put leatherside chub at risk for listing under the Endangered Species Act (ESA). Therefore, the implementa-

tion of conservation efforts for leatherside chub is necessary.

The Endangered Species Mitigation Fund and federal funds are currently supporting an effort to develop a management plan for leatherside chub. This plan will outline a strategy to reduce threats, reverse the declining population trends, and ensure the long-term persistence of the species. It is anticipated that this effort will reduce any future need to list leatherside chub under ESA.

Several actions are being implemented to develop the plan. Surveys are being conducted to better define current distribution, identify threats, and determine status. Existing information is being compiled from the scientific literature and from technical reports. The available information will be sum-

marized, and an initial determination will be made regarding whether the fish populations in Utah are more likely to be a single species or two distinct species.

A review of potential threats to the species will be prepared, and an outline of conservation measures will be provided. Conservation measures will likely include habitat protection and enhancement, non-native species control, range expansion, and populations monitoring.

The plan will address the biological needs of leatherside chub, and also assist the U. S. Fish and Wildlife Service in preparing a response in the event that a petition to list the species under ESA is submitted.



Leatherside Chub

Leatherside chub shares habitat with many native Utah species, including Bonneville cutthroat trout (*Oncorhynchus clarki utah*), mottled sculpin (*Cottus bairdi*), mountain sucker (*Catostomus platyrhynchus*), reidside shiner (*Richardsonius balteatus*), and several other fishes, amphibians, and invertebrates. The effort to conserve leatherside chub populations may also improve the status of several other native Utah species, and consequently reduce any need to list them under ESA.

RECAPTURE

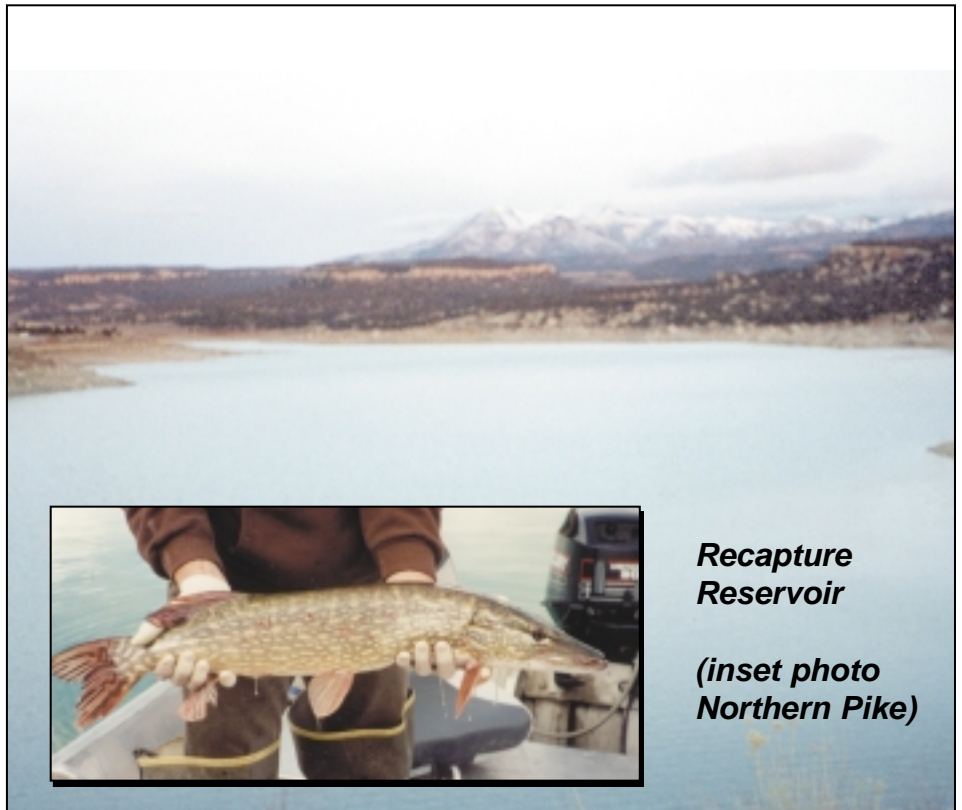
Barrier Reservoir Screen

by Louis Berg, DWR Southeastern Region Aquatics Manager

Recapture Reservoir Fish Barrier Screen: maintaining a sport fishery while preventing negative impacts to endangered species

Recapture Reservoir is a 265-surface-acre lake in the San Juan River drainage of southeastern Utah. The earthen dam creating the reservoir was completed in 1984, and the reservoir filled in 1986. Storage of agricultural water is the primary purpose of the lake, and recreation including fishing is a secondary benefit.

For the last 15 years, the Utah Division of Wildlife Resources (Division) has managed Recapture Reservoir as a trout fishery. However, other fish species have been illegally introduced. These species include green sunfish (*Epomis cyanellus*), black bullhead



Recapture Reservoir

(inset photo Northern Pike)

(*ameiurus melas*), goldfish (*Carassius auratus*) and northern pike (*Esox lucius*).

With the presence of the new species comes a need to protect downstream populations of native fish, including endangered species. Fish in Recapture Reservoir can periodically escape through the outlet of the dam into Recapture Creek. When they reach the San Juan River, they compete with and prey on the native species found there.

In 2000, the Southeastern Regional Wildlife Advisory Council (RAC) recommended that the Division put a screen on the outlet of Recapture Reservoir to prevent fish escapement. The Division contacted the Division of Water Resources to see if such a structure was feasible. That agency came up with a preliminary design and cost

estimate, and expressed a willingness to perform the project if funding could be obtained. The U.S. Bureau of Land Management, which owns the property at the project location, also approves.

Recently, Endangered Species Mitigation Funds amounting to \$18,000 were made available for the Division of Water Resources to finish designing, constructing and installing the screening device. Long term monitoring and maintenance of the screen are the responsibility of Division.

At the time this project was proposed, completion was expected in fall 2001. The project is now scheduled for spring 2002, but may need to be delayed further, or cancelled, depending on the results of a hydrologic study. The Division of Water Resources is initiating the hydrolog-

ic study to determine if the basic screen design upon which cost estimates are based is sufficient to withstand expected reservoir outflow.

This project, if pursued, will meet standards and recommendations of the San Juan River Endangered Fish Recovery Program. The screen will be constructed of 3/32-inch mesh and should be capable of passing all but a 50-year-or-greater discharge. Not even larval-size fish should be able to pass the screen.

The Department of Natural Resources and representatives of San Juan County are excited about this project. It will help maintain a sport fishery in Recapture Reservoir while protecting downstream endangered species. The project will also benefit other native fish species, helping keep them from being listed under the Endangered Species Act.

Bluehead Sucker Flannelmouth Sucker Roundtail Chub

by Todd Hogrefe, DWR Native Aquatic Species Biologist

Bluehead sucker (*Catostomus discobolus*), flannelmouth sucker (*Catostomus latipinnis*), and roundtail chub (*Gila robusta*) have experienced distribution declines during the past 50 years.

Human-induced changes have reduced the effectiveness of morphologic and life history adaptations that allowed native fishes to thrive in the historically harsh, fluctuating environment of the Colorado River Basin.

Agriculture, infrastructure and urban developments have dramatically distorted the natural, historical river environment. It has been estimated that 22 percent of historic riverine habitat has been converted to reservoirs by 140 dams and diversions throughout the Colorado River Basin.

Dam-induced changes in temperature, timing, and magnitude of stream flows negatively affect distribution and survival of native fishes. The introduction of at least 60 non-native fish species has caused additional alterations to populations of native Colorado River Basin fish. The negative effects of non-native fishes include predation, competition, and the introduction of non-native fish pathogens.

Conservation measures are needed to reverse the population trends for each of these species and to pre-



vent the need for listing under the Endangered Species Act (ESA). To direct and expedite the implementation of these measures, it is necessary to develop a management plan for these species. Support for this effort has been provided from federal sources and the Endangered Species Mitigation Fund.

Development of the management plan requires several actions. A status assessment was recently completed by Colorado State University. Surveys are currently being conducted to collect additional information. Given its potential importance for these three species, and other Colorado River Basin sensitive and endangered fish species, extensive surveys will be conducted in the San Rafael River to characterize the fish community and to determine habitat use and suitability. Existing biological and management information from the scientific literature and technical reports is being compiled and summarized.



This summary includes information for species taxonomy and morphology, habitat requirements and life history, distribution and status, ongoing management actions and threats to the species. A management strategy will be developed to reduce threats and ensure the long-term persistence of these species.

The strategy describes conservation measures that will include habitat protection and enhancement, range expansion and population monitoring. Implementation of these conservation measures should reduce any need to list these species under ESA in the future.

Conservation actions for blue-head sucker, flannelmouth sucker, and roundtail chub will be coordinated with recovery actions for the endangered fish of the Colorado River Basin, including bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), and humpback chub (*Gila cypha*). These actions may reduce threats to several other native fish, amphibian, reptile, bird, mammal and invertebrate species in the Colorado River Basin, and thereby reduce the need to list these any of species as threatened or endangered under ESA.



By M. Jane Perkins-Keleher, Native Species Biologist/PhD Student, Brigham Young University and Dr. Russell B. Rader, Aquatic Ecologist/Associate Professor, Brigham Young University

Wetlands, ecosystems that depend on constant or recurrent inundation or saturation, are some of the most challenged ecosystems in the United States. More than half (about 360,000 square miles) of the wetlands in the United States have already been lost. The most fundamental problem associated with the survival of the remaining wetlands is that they rarely excite the general public. One person's quiet marshy sanctuary worthy of eternal protection is another's mosquito-choked swamp fit only for a shopping mall. Only in the past few decades have we really begun to understand the importance of wet-

Utah's Desert Wetlands

lands, not only to the wildlife species, but to human society as well.

Wetlands are nature's most effective flood-control and water-filter device. Their dense vegetation and sediments improve surface water quality and purify groundwater by filtering out pollutants. Wetlands also provide habitat for at least 200 species of amphibians, 5,000 species of aquatic plants, and more than one-third of all the bird species in the United States.

The very characteristics that make wetlands unpleasant to humans, create perfect homes for damselflies, frogs, and birds. Of all of the wetlands in the United States, Utah's desert wetlands are some of the most unique, but unfortunately some of the least protected. Many of these wetlands occur within the Bonneville Basin, an area that was covered by ancient Lake Bonneville.

The Bonneville Basin is distinguished geologically by its characteristic parallel north-south mountain ranges that are separated by wide, alluviated desert basins and valleys. Numerous springs that form various sizes of iso-

lated wetland oasis are present at the base of the mountains and in the valley floors. Several aquatic species such as least chub (*tichthys phlegethontis*), and spotted frog (*Rana luteiventris*), have maintained relict populations in these wetlands since Lake Bonneville receded more than 10,000 years ago and today depend on these wetlands for their existence.

The significant loss (capping, draining, and filling) and degradation (polluting, grazing, and exotic species introductions) of these wetlands has provided impetus for resource agencies to develop and implement conservation and management plans to protect and restore these vital ecosystems and their inhabitants. One hurdle facing management agencies is the lack of information for determining the ecological integrity (health or condi-

tion) of these wetlands and which should be protected and restored.

Research has demonstrated the value of using living organisms to determine the health and integrity of aquatic habitats. Several community components such as aquatic insects (e.g. dragonflies) and emergent macrophytes (e.g. bull rush) are valuable assessment tools because they rapidly respond to disturbances and continuous pressures exerted by human activities.

Although basic bioassessment procedures have already been developed for a variety of aquatic habitats (e.g. streams and lakes), their application to desert wetlands requires new data.

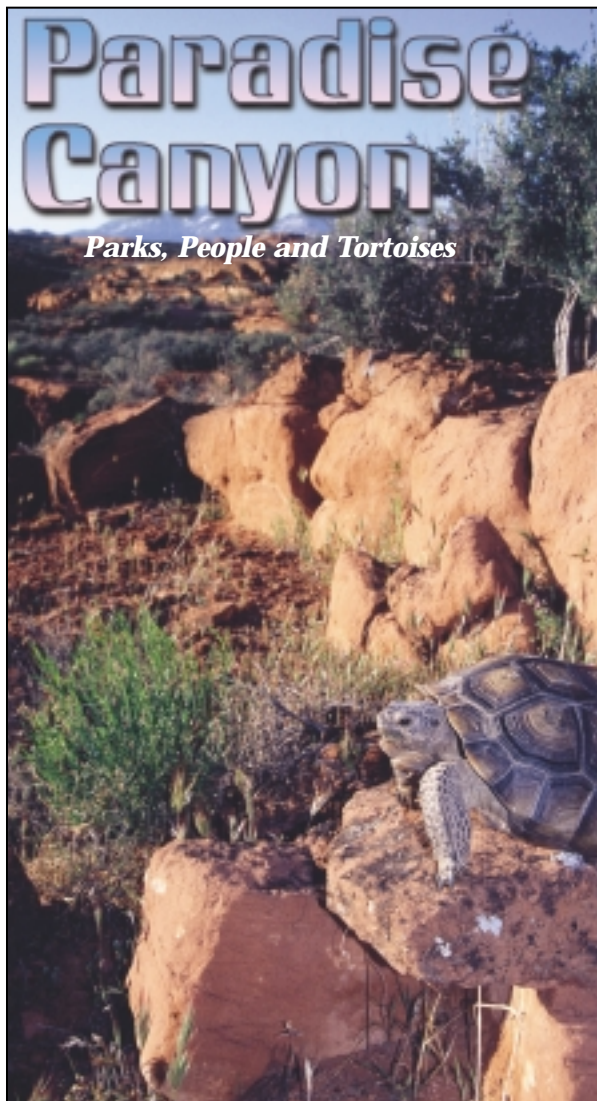
The overall value and importance of this study will be to provide resource managers, private land owners and developers, ecologists, environmental impact analysts and

other entities a new, efficient, and effective method for assessing the overall health and ecological integrity of desert wetlands.

Once complete, this method will be important in making biologically defensible decisions regarding conservation, protection, acquisition, restoration and mitigation of desert wetlands that species such as least chub depend on.

Efforts that result in protection, conservation and restoration of vital habitats may be the best means of preventing further sensitive species designations as well as downlisting current designations.

These procedures will facilitate collaboration between resource managers and project proponents to ensure that unique and vital wetlands are being conserved while allowing development and other human needs to be met.



by Wes Johnson, Lands Coordinator,
Utah Division of Parks and Recreation

Visitors to Snow Canyon State Park, Washington County residents and the Mohave desert tortoise (*Gopherus agassizii*) will all benefit from a new land purchase that will expand the park, ensure continued growth on private lands outside the Red Cliff Desert Reserve, and provide a secure habitat for the federally protected tortoise.

During the 1990s, Washington County was faced with unprecedented growth, conflicts with the federal government over the listed desert tortoise and the need to protect the beautiful red rock areas, which are home to so many winter residents.

County commissioners engaged the U.S. Fish and Wildlife Service, local developers, concerned citizens, and other local, state and federal government officials in preparation of a Habitat Conservation Plan, which would balance the need of private property owners with those of the tortoise. Compromise was the key ele-

ment of the plan. The plan allowed private property owners to develop some 12,000 acres of private property and "incidentally take" up to 1,200 tortoises presently occupying those lands.

Concurrently, the county established the Red Cliffs Desert Reserve, a contiguous 60,000-acre refuge nestled among the red rock desert north of Ivins, St. George and Hurricane.

Although primarily public land, private parcels in the reserve are to be purchased over a 20-year period at fair market value from willing sellers. Snow Canyon State Park, which receives one-half million visitors annually is also part of the reserve. As part of the agreement, the park will grow in size and will be managed for both visitors and tortoises.

Acquisition of the private lands will not only protect tortoise habitat, but will provide a buffer around main features of Snow Canyon. This buffer will protect scenic views and vistas, and will preclude development up to the park boundaries.

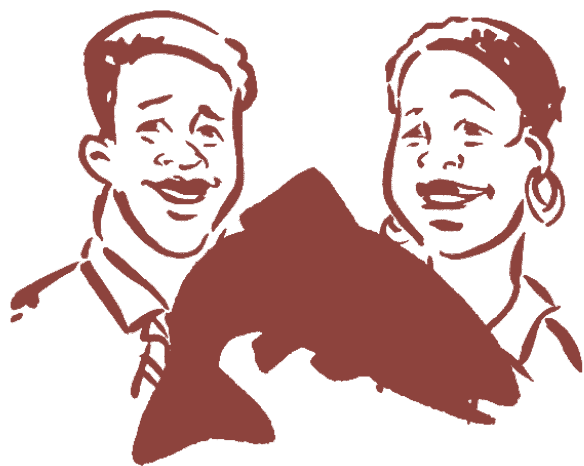
Residents of the county will have access to a large portion of the reserve for recreational use including horse-back riding, hiking and hunting. Snow Canyon State Park will be managed as it has in the past, providing continued access to unique features, while protecting fragile desert resources for future generations to enjoy.

Funding for establishment and operation of the reserve will come from local, state and federal sources.

Purchases, like those of Paradise Canyon, will be used to match federal funding in the future as the county grows and residents continue to enjoy one of the most scenic areas in Utah.



Snow Canyon State Park



What's more Important People or Fish?

by Reed Harris, Recovery Programs Director

Biologists have always wondered why this question is asked and while some agencies seem arrogant or lack compassion for users, most people understand that protection of our living environment basically comes down to the protection of you and me.

Decades ago, miners used to take canaries into the mines and if the bird reacted to the presence of gas, the miners got out. Likewise, early explorers and pioneers used to take the same tact when looking for good water to drink, they would look first to see if frogs and other animals and insects used the water before they did.

Can we truly find a solution that will accommodate irrigators, ranchers, developers and environ-

mentalists. We believe so, but it normally comes at a price...usually economic but sometimes in patience, understanding and a willingness to listen.

Not unlike the struggles between conservationists and developers going on elsewhere in the West, the continuing depletion of the Colorado River, acre-foot by acre-foot, has concerned the states who regulate the water, environmentalists and the federal government who is charged directly under the Endangered Species Act to protect listed species.

In the late 1980s, agencies administering the use of the Colorado River and its tributaries came together to balance use and find a way to accomplish both the needs of the fish and the needs of users.

The concept formulated under the Colorado River Recover Implementation Program (see related story page 9) involved the one time payment of a fee for new depletions as users sought permits,

funding and licensing through the federal government. Although early on this form of payment was labeled "blackmail" and "extortion", users came to realize that payments made to protect listed fishes also helped in their recovery and that the only way the endangered species problem would be resolved was through programs and activities that helped improve the species' status.

Payment of depletion charges (currently about \$15/acre-foot) has generally been accepted by most users.

However, irrigators who rely on large quantities of water to raise crops often cannot come up with the costs associated with new or improved irrigation practices funded in part by the federal government. The Endangered Species Mitigation Fund has assisted farmers participating with Price-San Rafael Salinity Control project in complying with this new obligation.

Water Conservancy Districts within the Colorado River Basin can apply to the ESMF, if these charges cannot be handled in other ways.



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